WHAT IS CLAIMED IS:

1. An apparatus that is part of a reusable fuel processing unit of a main reactor comprising:

a drive system;

a coupling;

a gear box;

augers;

an elongated tubular barrel housing; and

a plurality of split assembly clamshell heater boxes,

wherein, the drive system comprises a gear drive,

wherein, the gear drive is arranged with a vertical footprint to reduce the overall length of the main reactor,

wherein the gear drive is connected to the coupling,

wherein, the coupling is designed to separate under overloading conditions to protect the gear box,

wherein, the coupling consists of two augers, one having left-hand flights, the other having right-hand flights, the two augers comprising drive shafts, where one of the drive shafts of the two augers is longer than the other and is configured to extend into the gear box and connect to a drive coupling to provide rotation,

wherein, the gear box is extended to accommodate a cantilever load of the two augers,

wherein, the elongated tubular barrel housing is configured having one side that is tapered to reduce an outlet area to increase back pressure inside a heated airlock feeder,

wherein, the two augers are located within the elongated tubular barrel housing,

wherein, an assembly of the two augers and the elongated tubular barrel housing is surrounded by the plurality of split assembly clamshell heater boxes,

wherein, the two augers are elongated, axially rotatable screws each having an elongated shaft with outwardly extending helical flighting along one-half of a length of each elongated shaft starting at the gear box and ending in a smooth surface where the smooth surface has the same diameter as the augers with the outwardly extending helical flighting, wherein, the flightings of

the two augers overlap to provide rotation of the outwardly extending helical flighting in opposite directions.

2. The apparatus of claim 1, wherein, smooth parts of each auger at an output side of the apparatus are machined so that a space between each auger and the elongated tubular barrel housing is less than 1 inch.

3. The apparatus of claim 1, wherein the elongated tubular barrel housing is connected to a feeder assembly.

4. The apparatus of claim 1, wherein each clamshell heater box comprises upper and lower sections.

5. The apparatus of claim 4, wherein the upper and lower sections are circular through 180 degrees.

6. The apparatus of claim 4, wherein each lower section includes a perforated screen.

7. The apparatus of claim 6, wherein the perforated screen is mounted approximately three inches above the lower section.

8. The apparatus of claim 6, comprising an ignition source disposed inside each clamshell heater box next to the perforated screen.

9. The apparatus of claim 6, wherein the perforated screen is configured to control a flame height while allowing a volume of gas and air mix to pass there through.

10. The apparatus of claim 6, wherein the perforated screen is metal.

11. The apparatus of claim 6, wherein each lower section comprises an air mixer box including a burner connection port.

12. The apparatus of claim 11, comprising a flame sensor.

13. The apparatus of claim 11, comprising a fan pressure switch.

14. The apparatus of claim 1, wherein the apparatus is connected to an expansion cart for allowing the apparatus to expand and contract.

15. The apparatus of claim 14, wherein the expansion cart is configured to rest on a support frame of the apparatus.

16. The apparatus of claim 15, wherein the expansion cart comprises metal plate construction and rests between retainers connected to the support frame, the expansion cart being configured to roll on a surface of the support frame, thereby preventing up and down movement.

17. The apparatus of claim 1, wherein the gear drive is a helical gear drive.

18. The apparatus of claim 1, wherein the coupling is a shear coupling.

19. The apparatus of claim 1, wherein the gear box comprises gear drives configured to drive the two augers.

20. The apparatus of claim 19, wherein the gear drives of the gear box comprise spur gears.

21. An apparatus that is part of a reusable fuel processing unit having an assembly being used to introduce plastic into a main reactor and act as an airlock at the same time allowing for continuous feeding of plastic into the main reactor, comprising:

a drive system;

a coupling;

a gear box;

augers;

an elongated tubular barrel housing; and

split assembly clamshell heater boxes,

wherein, the drive system comprises a gear drive,

wherein, the gear drive is arranged with a vertical footprint to reduce the overall length of the main reactor,

wherein the gear drive is connected to the coupling,

wherein, the coupling is designed to separate under overloading conditions to protect the gear box,

wherein, the coupling consists of two augers, one having left-hand flights, the other having right-hand flights, the two augers comprising drive shafts, where one of the drive shafts of the two augers is longer than the other and is configured to extend into the gear box and connect to a drive coupling to provide rotation,

wherein, the gear box is extended to accommodate a cantilever load of the two augers,

wherein, one side of the elongated tubular barrel housing is tapered to reduce an outlet area to increase back pressure inside a heated airlock feeder,

wherein, the two augers are located within the elongated tubular barrel housing,

wherein, the assembly of the two augers and the elongated tubular barrel housing is surrounded by two split assembly clamshell heater boxes, one covering one end of the two augers and the other covering the other end of the two augers, that produce heat that allows the airlock to seal and start vaporization of plastic inside the heated airlock feeder, the split assembly clamshell heater boxes coming into contact with the heated airlock feeder allowing for greater expansion of a housing from the split assembly clamshell heater boxes due to that they are insulated on the inside so metal does not expand on the outside,

wherein, the two augers are elongated, axially rotatable screws each having an elongated shaft with outwardly extending helical flighting along one-half of the length of each elongated shaft starting at the gear box and ending in a smooth surface where the smooth surface has the same diameter as the augers with the outwardly extending helical flighting, wherein, the flightings of the two augers overlap to provide rotation of the outwardly extending helical flighting in opposite directions.